

Sonic Studios™ SD Flash Portable Recorder Review

MODEL: Edirol/Roland R-09

NOTICE: In-Progress and Updated Version

(This review is being written/edited; [e-mail](#) suggestions welcome)

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Introduction:

This review is narrowly focused ONLY on deck operational features, ease of use, consistent recording ability/quality, and design fault issues related to stereo-surround field recordists with direct connected mics; issues usually not discussed in commercial magazine reviews. In other words, how suitable is the Edirol/Roland R-09 as an 'all-in-one' deck solution for the professional field recordist?



The R-09 model is Edirol/Roland's 3rd digital audio recording deck. This is a very small well designed deck for general purpose 16 & 24bit/44.1 & 48k/MP3 analog input remote field work.

Shirt-pocket-sized, 2 AA cell easy power, very fast boot-up/ responsive controls, inputs nearly IMPOSSIBLE TO OVERLOAD, and with adequately quiet internal mic preamp, there's plenty to like about this affordable model.

Case and layout of function buttons are well designed. However, the very lightweight plastic gives no immediate confidence for surviving mishaps, and the sliding-hinging battery hatch shouts 'be very ginger with me or I'll soon break!'

R-09 has NO digital audio (SPDIF) input, but does have optical (miniplug type) output hiding inside the headphone jack that also serves as a form of line output for this deck. Optical output cable is NOT included, but USB 2.0 patch and 3 volt AC adapter is included.

Those using WIN 98SE will find this deck (and even using an external card reader, the SD flash) is NOT recognized, but MAC and WIN ME/XP users should have no problems with USB connection.

As opposed to M-Audio Microtrack 24/96 CF portable previously being shipped incomplete needing a series of user installed firmware updates, Edirol/Roland little mention needing other than as-shipped 1.03 firmware. Procedures to upgrade if ever required is explained on Roland's site. Good news is R-09 seems quite complete and 'ready to go' without compromised functions of any sort right-out-of-the-box. Also different from Microtrack is the backlit LCD display is NOT daylight visible.

3.5mm minijack mic input has menu controlled on/off 2.5 volt power useful for electret type mic power. Not quite enough voltage for powering DPA 4060 series, but adequate for most electret condenser types needing direct 'plug-in-mic' powering.

However, disappointed to find my own Sonic Studios DSM™ mics will not be properly powered by the stock R-09. The good news is internal mic power circuitry can MOD-3 upgraded allowing DSM™ mic owners the simplest 2-piece mic+deck recording system as was practical to do with Sony mini-DAT decks.

Additional good news is both mic/line R-09 inputs have tested adequately quiet and of sufficient bandwidth for at least 16bit depth recording requirements. However, audible improvement for 24 bit

depth recording is likely with the addition of high quality external mic preamplifier for lowest noise/distortion requirements.

Summary: Edirol/Roland R-09 deck is very good to excellent as an all-in-one recorder for at least self-powered condenser/dynamic mic field recording, and for DSM™ stereo-surround mics only with internal MOD-3 upgrade, passive PA adapter, or external preamp for optimum quality recording.



Top view of MIC and LINE input 3.5 mm jacks



Bottom view of fully slid/hinged open battery door compartment with USB/SD flash slot



Back top-half view showing recording option switches



Front view showing backlit screen, peak indicator, menu, reverb, repeat buttons, and 5-function play/recording control switch



Left side view of (top-to-bottom) Left side mic, Power ON/OFF button, REC up/down adjust buttons, and 3 volt DC power jack hinging hatch cover.



Right side view of (top-to-bottom) right side mic, headphone-SPDIF optical-Line output jack, headphones up/down loudness buttons, HOLD on/off slide switch

The Edirol/Roland R-09 deck has only two audio inputs, analog MIC and LINE into separate 3.5mm jacks at top of deck.

The MIC input is modified or controlled by LOW/HIGH sensitivity slide switch , AGC on/off, MONO/STEREO mic selection, and LOW CUT on/off located on deck's upper half backside.

The LINE input handles fully professional input levels up to a whopping +16 dBm! Ability to handle such high input levels without clipping is a first in a portable minideck without needing external attenuation adapters.

Chart is describes inputs and control settings

INPUT	L/H SWITCH SETTING	REC LEVEL ADJUSTMENT SETTING (1)	#30 dBv* DECIBELS INPUT	#30 RMS VOLTS INPUT	#1 dBv* DECIBELS INPUT	#1 RMS VOLTS INPUT
			For 0 dB VU		For 0 dB VU	
MIC	LOW	#1& #30 SETTINGS	-20	80 mv	+10	2.5 volts
	HIGH		-45	5 mv	-16	130 mv
LINE	N/A	#1& #30 SETTINGS	-13	190 mv	+16	4.9 volts

(1) The R-09 has a single set of buttons for REC Level adjustment control located on deck's left side. This control has #0-to-#30 steps where #1-#30 are 1 dB and #1-to-#0 is essentially a mute with over 30 dB signal reduction in one step. **Therefore, there's 29 dB of REC level adjustment range at the MIC and LINE inputs.**

This R-09 has astonishing high voltage input signal ability, so users can virtually forget about needing input attenuation using MIC or LINE input regardless of MIC (up to +10 dBv) or analog LINE level (up to +16 dBv) inputs.

* NOTES: dBv = dBm = 0.775 volt RMS = 0 dB reference level.

Edirol/Roland R-09 Record/Playback controls allow easy single-handed operation.

Buttons have designed-in tactile feel with molded pictographs. Buttons give a soft felt click allowing ability to manually operate deck sight-unseen with headphones monitoring.

Menu-selections do not wrap (*preferred by sightless recordists*), but single menu button push either gives file listing, or settings options (*maybe*) depending on duration of button press. This causes some confusion and/or getting used to.

A VERY bright RED LED backlit bezel (*see 7 at right*) surrounds the REC button. This flashes to indicate paused recording, and steadily lights when recording. **No more mistaking you're**



recording when only still in pause mode with this deck!

This REC indicator is barely visible in bright daylight, and maybe for 100 foot distance in normal indoor lighting. However, in near darkness, quite possible to **illuminate a person's entire upper body(!)** even if hidden from view inside a protective case if anyone takes a peak to check how things are going!

Can you say stealth recording BUMMER!?

Definitely not menu defeatable or

paintable as bezel seems pliable silicone rubber, AND paint fluid would naturally funnel down to freeze the REC button. **Now can you say circuit modification hack time!?**

TIP: Some users report good results with taping a small square patch of dark colored plastic garbage across the navigation switch area. This plastic bag material is very flexible to still allow operating the REC, PLAY, and STOP buttons.



This deck boots in just a couple seconds, and operational controls are very responsive.

The R-09 is designed for using just 2 GIG SD flash, but users report some 4 GIG cards mostly work OK but only with computer reader formatting.

While I very much like the backlight LCD display showing plenty of details, **it's only clearly visible indoors** or outdoors at nightfall. **LCD is virtually invisible in daylight** regardless of backlight setting or working in the shade.

In any case, there's no hope to use this deck outdoors in daylight if needing to see the screen information while recording. Not without some kind of viewing hood worked out. Something must be done for daylight viewing ability.

TIP:(Next tip) Make a folding viewing hood 'permanently' taped to the deck. Or maybe find a case with folding viewing hood as the main feature? See recently found 'DAYLIGHT VIEW CASE' SOLUTION below.

Record button starts and ends the recording process.

A single SMALL RED CLIP LED on the front panel immediately indicates overload.

R-09 CLAMSHELL DAYLIGHT VIEW CASE

Recently **FOUND** a practical daylight LCD viewing solution for R-09 in the form of a snug-fitting molded clamshell case. (Shown at right.)

The case not only protects the deck from bumps and scrapes, there's a very effective integral viewing hood inside.

This viewing hood provides the deep shade needed to keep the LCD from washing-out in bright daylight.

The **DAYLIGHT VIEW CASE** is a **SonicStudios.com** exclusive and a must for practical R-09 field protection/display monitoring. **Cost is \$25 USD + Shipping**



Suggest (if having sufficient memory capacity) recording at 24 bit depth verses 16 bit depth. File size is ~30% larger (~30% less flash card recording time), but advantage is ability to record more detailed audio (resolution) information.

ALSO very useful for more relaxed low (-20 to -12 dBvu) REC VU recorded peak levels while loosing little or NO audio details compared to trying to push VU peaks using shallow 16 bit depth.

24 bit advantage is increased headroom against overloads most welcome when monitoring VU/adjusting REC level is less practical for keeping low-profile in public places.

USE ALKALINE BATTERY MODE

USER REPLACEABLE INTERNAL BATTERY

(2) AA ANY KIND

Akaline: expect 4 hours, more in hot ambient.

OXY- Alkaline: 'OXYRIDE' (Panasonic) and 'digital3shot' (Sony), should get at least 6 hours.

Lithium L91: Energizer Photo Lithium, likely 8+ hours, more if used within 24 hour period. Excellent in extreme cold ambient.

USE NiMH MODE

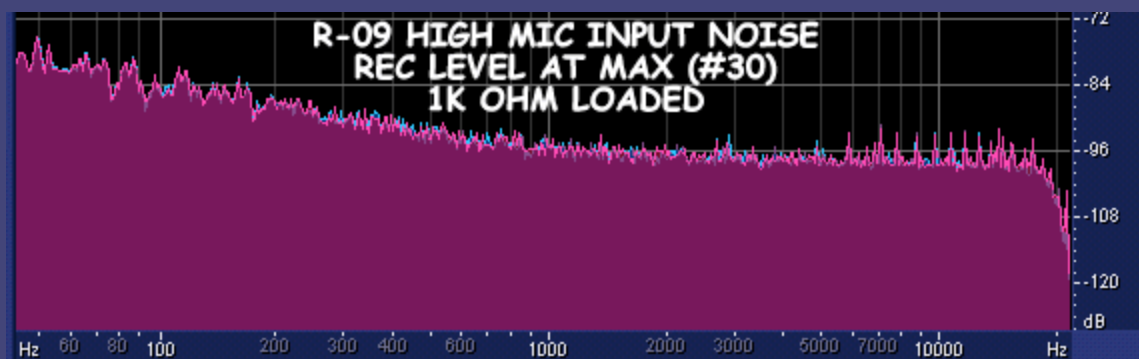
Rechargeable NiMH 2300 to 2600 MA capacity: Reports of 7-8 hour run time.

NOTE: Deck does **NOT** charge batteries.

Use NiMH batteries as (marked) 2-cell sets with dedicated fast charger for best results.

Noise spectrums of minijack MIC and LINE analog inputs

(All inputs 1000 ohms 1% metal film resistor loaded to ground unless noted; 24bit/44.1K sample rate data)



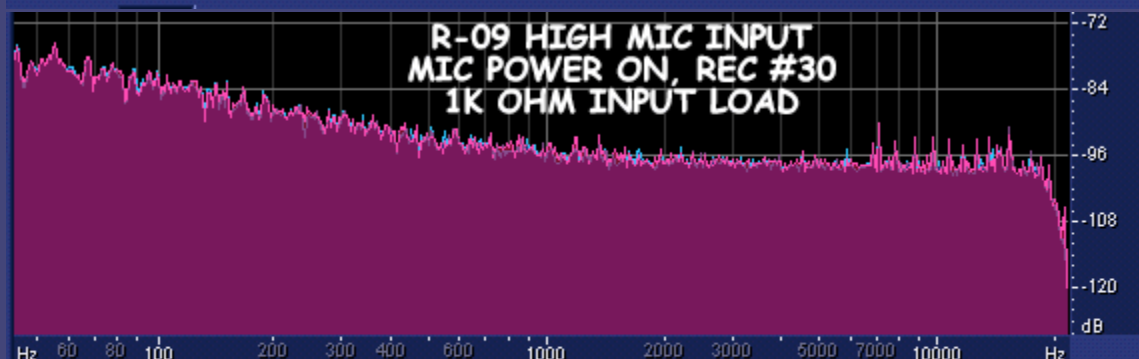
'HIGH' MIC input

MIC POWER OFF

MAXIMUM GAIN

82.09 Hz, L=-80.64 dB, R=-80.48 dB L= 2.8851 Hz (F#-3 -3), R= 2.8944 Hz (F#-3 +2)

Area (Right on top) FFT Size 65536 Blackmann-Harris



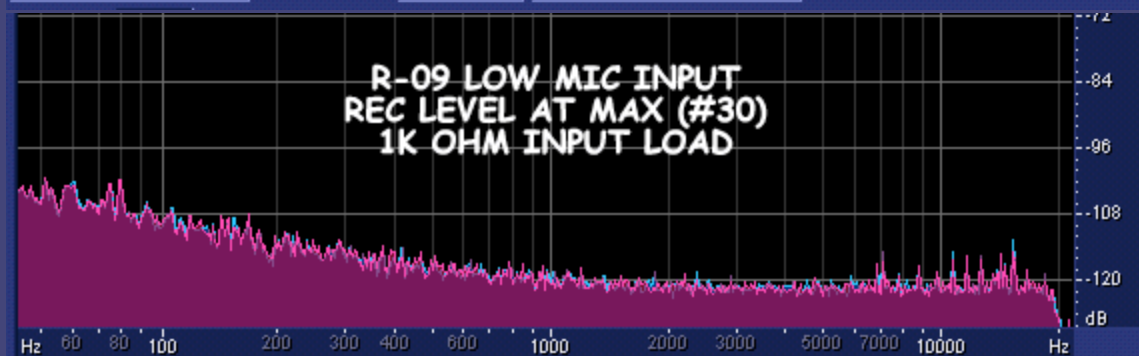
'HIGH' MIC input

MIC POWER ON

MAXIMUM GAIN

55.17 Hz, L=-76.07 dB, R=-75.95 dB L= 3.097 Hz (G-3 +19), R= 3.4816 Hz (A-3 +22)

Area (Right on top) FFT Size 65536 Blackmann-Harris



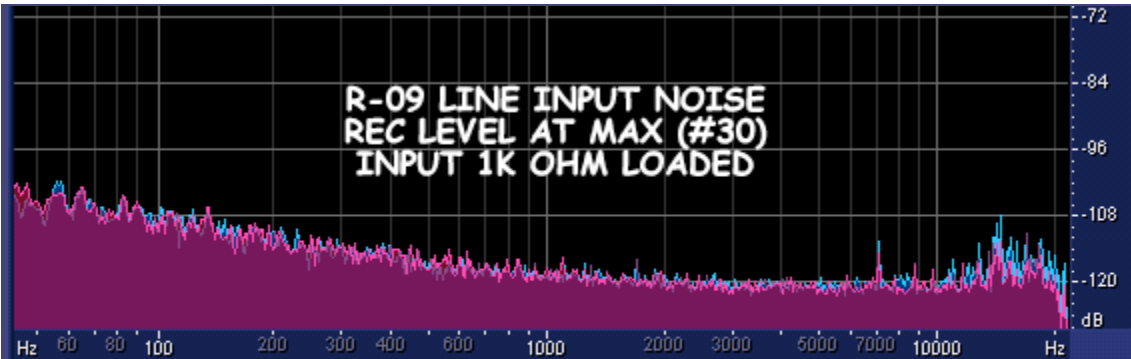
'LOW' MIC input

MIC POWER OFF

MAXIMUM GAIN

84.78 Hz, L=-108.2 dB, R=-108.1 dB L= 3.7445 Hz (A#-3 +48), R= 3.7611 Hz (B-3 -44)

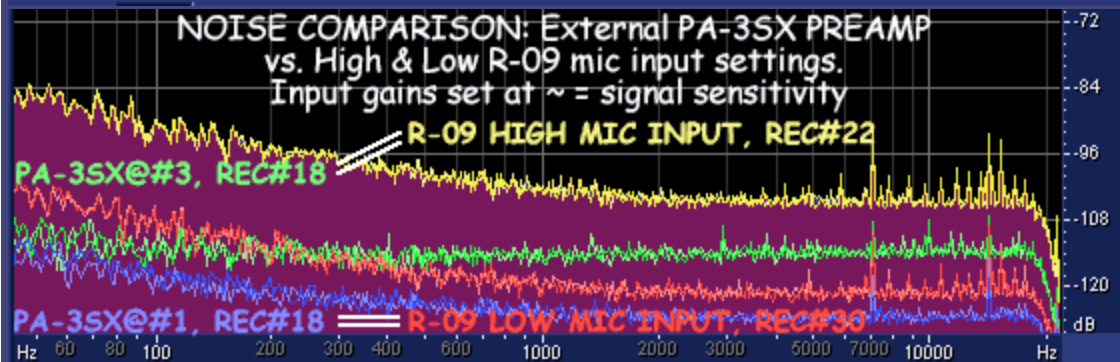
Area (Right on top) FFT Size 65536 Blackmann-Harris



LINE INPUT

MAXIMUM GAIN

95.55 Hz, L=-107.7 dB, R=-110.2 dB
 L= 2.1584 Hz (C#-3 -5), R= 2.1621 Hz (C#-3 -2)
 Area (Right on top) FFT Size 65536 Blackmann-Harris



LINE INPUT

with external PA-3SX preamplifier compared to MIC input set to same input sensitivity.

External preamp allows for lower input noise operation most suitable for 24 bit recording modes.

43.06 Hz, L=-86.47 dB, R=-86.18 dB
 L= 5.1909 Hz (E-2 +13), R= 10.397 Hz (E-1 +16)
 Area (Right on top) FFT Size 65536 Blackmann-Harris

NOTE: Some have found the above comparison confusing. All test were done with 1000 ohm dummy load at the inputs of R-09 mic jack and PA-3SX external preamplifier.

Best I can explain, the YELLOW trace is R-09 MIC input at 'HIGH' gain mode with REC level adjust setting at #22 (#30 is maximum) compared to best signal stage external preamplifier I know to design/build set at highest gain selection (PA-3SX external preamp is the green trace). For the deck's preamp set in high mode and #22 REC level, both internal and external preamplifier are applying the same gain to the MIC input with REC adjust set at #18 when external preamp is connected.

Under these conditions, if a mic was connected to either deck's mic input (the internal mic pre), or the external PA-3SX mic pre, the VU would read the same signal strength for identical loudness acoustic sound hitting the microphone, but the electrical input background noise (the electronics) would be at least 20 dB lower using the external preamplifier.

Obviously, the external preamplifier is going into the deck's LINE input, while the internal MIC preamp of the R-09 is working from the MIC input on the deck. In other words, for the same applied mic input gain, the green trace shows the recorded background noise with custom designed external preamplifier verses the yellow trace showing the background noise of the internal R-09 mic pre with all input conditions being equal.

Same type comparison is done again with RED trace showing deck's internal preamp now set in LOW mic input mode with REC level adjustment set this time at #30 maximum, and now compared to the VIOLET trace made with PA-3SX pre set at lowest (of three) gain settings with adjusting the deck REC level setting to #18 so input signal gain is again equal for internal/external inputs. This second set of traces (RED vs. Violet) shows at least 12 dB quieter input with the external preamplifier for equal applied mic input signal gain.

Even knowing much lower input noise is possible with special external preamp, the internal mic pre noise of the R-09 deck is NOT bad for general purpose recording with moderately high output microphones.



PA-3SX external preamp shown Velcro attached to R-09



PROBLEM #1

Attaching accessories to R-09's backside with sticky-backed Velcro™ is a practical way to attach/easily remove accessories. **However, the R-09's back panel is paper-thin**, held in place by only three little 'tuck-in' tabs at the bottom. These are so very easily pulled out with the slightest tug.

SOLUTION #1

Secure the back panel with 0.5" wide/2.5" length tape as shown below. This keeps the panel in place when detaching Velcro'd accessories.

PROBLEM #2

The R-09 sliding battery door sticks, and this easily makes the door slide unevenly encouraging damage.

SOLUTION #2

Lubricate the sliding taps with wax. Suggest wiping the tabs with wax paper, or use a small 'birthday' candle.

TIP:



Aluminum metal tape is suggested for being strong, thin, and easily removed if needed leaving little residue.

CAUTION ADVISED



Lubricate sticky battery hatch door slide by rubbing tabs with wax paper or maybe use 'birthday candle' wax

[NEXT TIP](#)

Media Capacity (MB)	WAV Recording Time In Seconds							
	16 bit depth				24 bit depth			
	44100	48000 (sample rate)	88200	96000	44100 (sample rate)	48000	88200 (/96K)	
64	380	350	190	175	254	233	127	
128	761	699	380	350	507	466	254	
256	1522	1398	761	699	1014	932	507	
512	3043	2796	1522	1398	2029	1864	1014	
1024	6087	5592	3043	1 GIG	4058	3728	2029	1 GIG
2048	12174	11185	6087	5592	8116	7457	4058	
4096	24348	22370	12174	11185	16232	14913	8116	
6144	36522	33554	18261	16777	24348	22370	12174	
8192	48696	44739	24348	22370	32464	29826	16232	

Media Capacity (MB)	WAV Recording Time In H:M:S							
	16 bit depth				24 bit depth			
64	0:06:20	0:05:50	0:03:10	0:02:55	0:04:14	0:03:53	0:02:07	
128	0:12:41	0:11:39	0:06:20	0:05:50	0:08:27	0:07:46	0:04:14	
256	0:25:22	0:23:18	0:12:41	0:11:39	0:16:54	0:15:32	0:08:27	
512	0:50:43	0:46:36	0:25:22	0:23:18	0:33:49	0:31:04	0:16:54	
1024	1:41:27	1:33:12	0:50:43	1 GIG	1:07:38	1:02:08	0:33:49	1 GIG
2048	3:22:54	3:06:25	1:41:27	1:33:12	2:15:16	2:04:17	1:07:38	
4096	6:45:48	6:12:50	3:22:54	3:06:25	4:30:32	4:08:33	2:15:16	
6144	10:08:42	9:19:14	5:04:21	4:39:37	6:45:48	6:12:50	3:22:54	
8192	13:31:36	12:25:39	6:45:48	6:12:50	9:01:04	8:17:06	4:30:32	

Media Capacity (MB)	MP3 bit rate		MP3 Recording Time in Seconds				N
	96000	128000	160000	192000	224000	320000	
64	5592	4194	3355	Hi-Quality			
128	11185	8389	6711	5592	4793	3355	
256	22370	16777	13422	11185	9587	6711	
512	44739	33554	26844	22370	19174	13422	
1024	89478	67109	1 GIG	44739	38348	26844	1 GIG
2048	178957	134218	107374	89478	76696	53687	
4096	357914	268435	214748	178957	153392	107374	
6144	536871	402653	322123	268435	230088	161061	
8192	715828	536871	429497	357914	306783	214748	

Media Capacity (MB)	MP3 Recording Time in [Days]:H:M:S			MP3 Recording Time in [Days]:H:M:S		
64	[0]:1:33:12	[0]:1:9:54	[0]:0:55:55	[0]:0:46:36	[0]:0:39:57	[0]:0:27:58
128	[0]:3:6:25	[0]:2:19:49	[0]:1:51:51	[0]:1:33:12	[0]:1:19:53	[0]:0:55:55
256	[0]:6:12:50	[0]:4:39:37	[0]:3:43:42	[0]:3:6:25	[0]:2:39:47	[0]:1:51:51
512	[0]:12:25:39	[0]:9:19:14	[0]:7:27:24	[0]:6:12:50	[0]:5:19:34	[0]:3:43:42
1024	[1]:0:51:18	1 GIG	[0]:18:38:29	[0]:14:54:47	[0]:12:25:39	[0]:10:39:8
2048	[2]:1:42:37	[1]:13:16:58	[1]:5:49:34	[1]:0:51:18	[0]:21:18:16	[0]:14:54:47
4096	[4]:3:25:14	[3]:2:33:55	[2]:11:39:8	[2]:1:42:37	[1]:18:36:32	[1]:5:49:34
6144	[6]:5:7:51	[4]:15:50:53	[3]:17:28:43	[3]:2:33:55	[2]:15:54:48	[1]:20:44:21
8192	[8]:6:50:28	[6]:5:7:51	[4]:23:18:17	[4]:3:25:14	[3]:13:13:3	[2]:11:39:8

Suggestions for SD memory cards likely to work reliably in the Edirol/Roland R-09 flash recorder:

SanDisk ULTRA II

NOTE: Tested OK for all audio recording purposes. This type SD flash are +9 MB/SEC SEQUENTIAL write speed, and available in *2 GIG size. Recommended for consistent reliability and excellent unlimited lifetime warranty.

Kingston Elite Pro 2GB

NOTE: PROVEN to work in CF form with MT24/96 audio deck, BUT NOT verified or proven for R-09 audio (SD flash) recording. However, Kingston brand is highly regarded for quality + excellent unlimited lifetime warranty. +50x rated, but no actual read/write speeds. Available in *2 GIG. Recommended for lowest costing with likely consistent reliability for audio purposes.

NOTE: R-09 is rated for 2-GIG SD type flash only.

ADVISORY: As with most memory products, most consistent performance is with purchasing name brand showing suitable specifications for your application, **AND verified reports from satisfied users of same deck model/firmware who are ALSO recording at the exact same file rates you intend to use.**

R-09 deck was designed to ONLY use 2 GIG size SD cards, but owners who want more capacity report good results with Transcend (5 year warranty), but inconsistent data and several card failures with A-DATA brand flash. Reputable retailer list of 4-GIG SD flash HERE.

NOTE: Computer format 4-GIG SD flash ONLY; R-09 deck will NOT format this size.

BEST TO NOT USE ACCELERATED WRITE technology flash memory for audio recording purposes.

Advanced with acceleration write modes use data burst techniques best for writing camera files, but burst modes may disrupt reliable audio recording and these types flash should be avoided.

TIP: Best to ALWAYS freshly format the flash card INSIDE the deck whenever removed from the deck for purpose of transferring files with a separate card reader.

Also a very good idea to freshly format the card even if left always inside the deck. Do this everytime all needed files have been safely transferred and all remaining files are to be deleted. Reformatting flash card erases ALL stored files and allows most reliable new file creation by the deck. **(Next Tip)**

This 9/27/2006 posted review of the Edirol/Roland R-09 is NOT finished; expect updates

What's on Sonic Studios Web Site: *(Click underlined text, and navigation photos)*

[Home Page](#)

DSM™ Patented Stereo-Surround Microphone Technology



Eye-gear/Headband/HRTF Baffle mountable matched omni mics



Stops wind blast noise; transparent acoustic design; records real wind sounds

for MD, DAT, CF, HD, and Video Field/Event/Studio Recording



4 Channel Surround DSM™ Microphone System
Headworn or HRTF LiteGUY Baffle Mounted

Passive DSM™ Mic Powering/Bass Filters



PA-10XP DSM Mic Powering Adapter
(for MicroTrack 24/96)

Battery Powered-Portable Mic Preamp

High-definition, low noise, very wide bandwidth preamp designs to fit any field/event/studio application using DSM™ stereo-surround recording mics.

HRTF RECORDING

Stereo-Surround Omni Mic Baffle for Stand, Fishpole, Studio Boom, and Ceiling



MONO ONLY 'Lombardo' Lapel Mic for interview, Narration, Lecture, and clip-on acoustic instrument Recording



LitGUY HRTF Mic Baffle
(shown w/optional Windscreen)

RECORDING ACCESSORIES



Patch/Adapter Cables



Field/Studio Monitoring Headphones, Reviews



Portable Deck Power Solutions



Long Running Power for Edirol R-4, Portastudio FR2, Marantz 670/671



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